USDA Natural Resources
Conservation Service

Ecological site R023XY410OR
GRAVELLY RIDGE 12-16 PZ

Accessed: 05/12/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R023XY302OR	**SOUTH SLOPES 12-16 PZ** South Slopes 12-16" PZ
R023XY310OR	**NORTH SLOPES 12-16 PZ** North Slopes 12-16" PZ
R023XY312OR	**SHALLOW NORTH 12-16 PZ** Shallow North 12-16" PZ
R023XY318OR	**LOAMY 12-16 PZ** Loamy 12-16" PZ
R023XY321OR	**DEEP LOAMY 12-16 PZ** Deep Loamy 12-16" PZ
R023XY404OR	**DEEP NORTH 12-18 PZ** Deep North Slopes 12-18" PZ

Similar sites

R023XY312OR	**SHALLOW NORTH 12-16 PZ** Shallow North 12-16" PZ (steeper)

R023XY218OR	**THIN SURFACE CLAYPAN 10-16 PZ** Thin Surface Claypan 10-16" PZ (thinner soil surface, clay substratum)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on ridgetops and shoulders in mountainous areas. Slopes range from 5 to 30%. Elevation ranges from 7000 to 8000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain (2) Ridge
Elevation	7,000–8,000 ft
Slope	5–30%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation is 12 to 16 inches, most of which occurs in the form of snow during October to April. Spring rains are common. The soil temperature regime is cryic. Extreme temperatures range from 100 degrees F. to -30 degrees F. The frost-free period is less than 50 days. The optimum period for plant growth is from mid-May through mid-July.

Table 3. Representative climatic features

Frost-free period (average)	50 days
Freeze-free period (average)	0 days
Precipitation total (average)	16 in

Influencing water features

Soil features

The soils of the site are medium textured, deep to bedrock, well drained and contain 50 to 80 percent rock fragments throughout the profile. Permeability is moderate. The available water holding capactiy (AWC) is about 3 to 5 inches for the profile. Rock fragments are typically gravel size (less than 3 inches in diameter).

Table 4. Representative soil features

Drainage class	Well drained
Permeability class	Moderate

Ecological dynamics

Range in Characteristics:
The reference native plant community is dominated by Idaho fescue, and Low sagebrush. Bluebunch wheatgrass and Sandberg bluegrass are common in the stand. All species of this site are represented by diminutive plants, with the shrubs commonly having a flat top growth form, due to blowing snow and other severe growing conditions. The

vegetative composition of the community is approximately 65 percent grasses, 15 percent forbs, and 20 percent shrubs.

Bluebunch wheatgrass will occur in higher percentages at lower elevations and be less prominent in the site at the higher elevations.

Four states have been identified for this site: a reference state; a state with the presence of annuals; a state that has Juniper and Low sagebrush co-dominant on the site, and a state with annual dominance.

Reference: Stable plant community affected infrequently by fire. Sites are dominated with low sagebrush with some sites exhibiting a small percentage of old growth juniper. Infrequent fire (> 80 to 100 year intervals) maintained site dynamics. Fire reduced shrub cover in a mosaic, patchy pattern. The introduction of invasive annual grasses and forbs transitions into the state 2.

State 2: Compositionally similar to the reference state with a trace of cheatgrass and/or medusahead and other annual weeds. Ecological function has not changed, however the resiliency of the state has been reduced by the presence of invasive weeds. Infrequent fire (> 80 to 100 years) reduces shrub cover, removes young juniper and promotes grass production while time since fire allows shrub recovery. Mismanagement of grazing facilitates an increase in Sandberg's bluegrass, weedy species, young juniper and low sagebrush. Bunchgrasses decline in production and density. Prescribed grazing can reverse the trend. Los of deep-rooted perennial bunchgrasses and an increase in young Juniper brings the site to State 3.

State 3: Low sagebrush and possibly young juniper dominated with minimal perennial, deep-rooted grasses. Cheatgrass and/or medusahead along with other weedy forbs are increased in density and cover. Sandberg's bluegrass cover and vigor declining. Water flow paths evident. Sagebrush and possibly juniper control site resources. Catastrophic wildfire leading to annual dominated plant community will take the site to State 4.

State 4: Cheatgrass and/or medusahead dominated. Few old growth juniper may be present. Rabbitbrush increased with few to no low sagebrush. Wind and water erosion drive site processes.

Response to Disturbance:
If heavy grazing causes site deterioration, Idaho fescue and bluebunch wheatgrass decrease in the strand and low sagebrush increases. With further deterioration, Idaho fescue and bluebunch wheatgrass are nearly eliminated while Sandbergs bluegrass, squirreltail and frobs increase. On severely disturbed areas of this site, the plant composition is comprised largely of low sagebrush and Sandberg bluegrass.

Palatability of most species on this site is not as good as associated sites at the same elevation and moisture regime i.e., mountain big sagebrush sites. For this reason, this site should not be used as a key area.

State and transition model

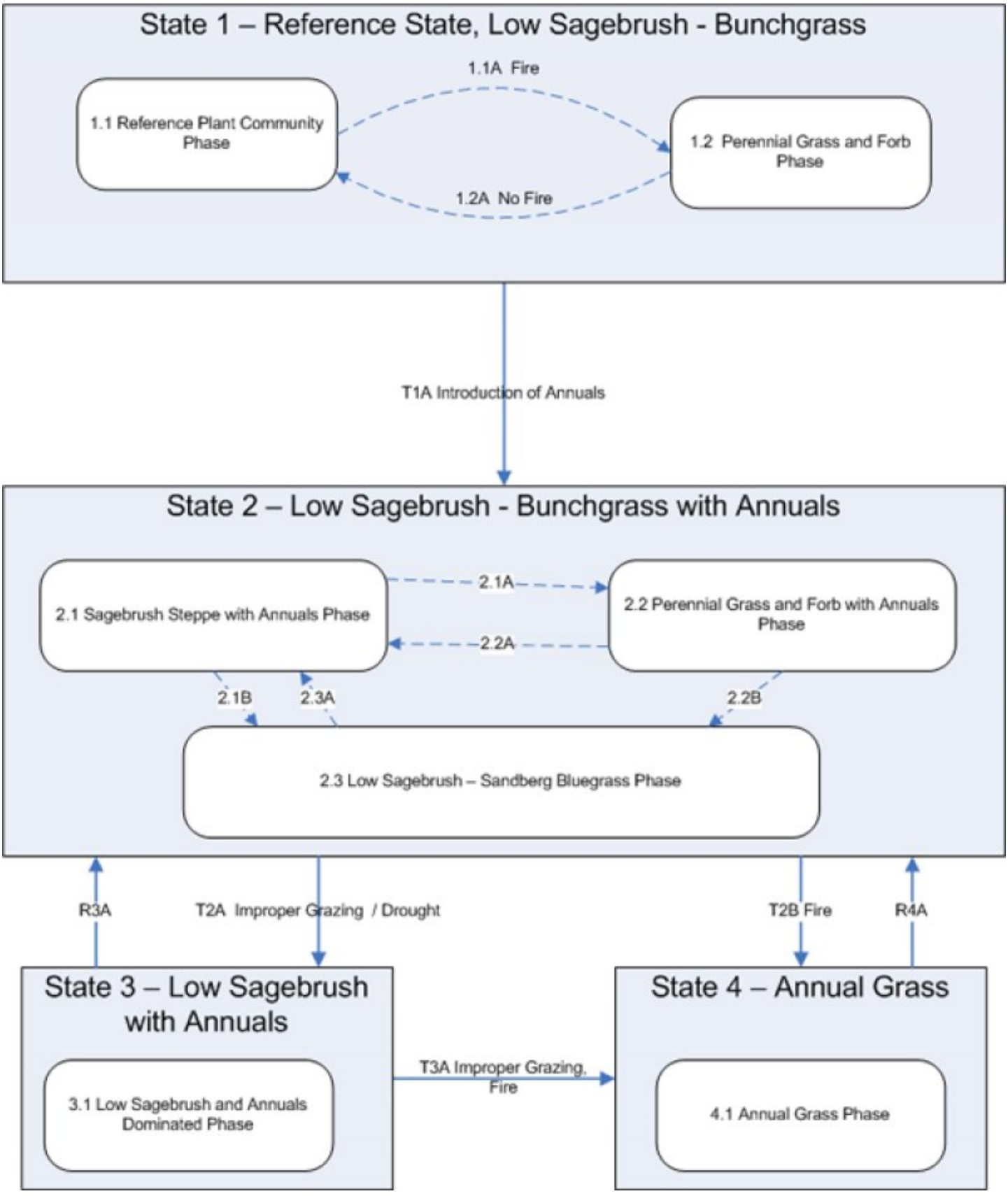

Figure 2. Group 10, STM

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The potential native plant community is dominated by Idaho fescue and low sagebrush. Bluebunch wheatgrass and

Sandberg bluegrass are common in the stand. All species of this site are represented by diminutive plants, with the shrubs commonly having a flat top growth form, due to blowing snow and other severe growing conditions. Vegetative composition is about 65 percent grass, 15 percent forbs, and 20 percent shrubs.

Additional community tables

Animal community

Livestock Grazing:
Tis site is suitable for cattle, horse and sheep use in late spring, summer and fall. Deferred grazing is recommended in at least one in three years.
Wildlife:
In the spring, mule deer will feed in the area if escape cover is nearby. This site is a major area sued for sage grouse strutting grounds. Due to the strong forb component, this is a preferred site for pronghorn antelope in the spring and summer.

Hydrological functions

The soils of this site have moderate infiltration rates and medium to rapid runoff potential. The hydrologic soil group is B.

Recreational uses

This site can provide uplands game hunting.

Other information

The extremely cobbly subsoil hinders rnage seeding and excavations for pipelines and fence construction.

Contributors

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Jeff Repp
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Date	08/17/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None, Moderate sheet & rill erosion hazard

2. **Presence of water flow patterns:** None

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3. **Number and height of erosional pedestals or terracettes:** None to some pedestals

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-30%

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5. **Number of gullies and erosion associated with gullies:** None

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None, Noderate wind erosion hazard

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7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Moderately resistant to erosion: aggregate stability = 3-5

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Medium textured deep well drained soils with 50-80% rock fragments throughout profile: Moderate OM (2-4%)

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (40-50%) and gentle to moderate slopes (5-30%) moderately limit rainfall impact and overland flow

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Idaho fescue > Low sagebrush > Bluebunch wheatgrass > forbs > other grasses > other shrubs

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or**

decadence): Normal decadence and mortality expected

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 800, Normal: 600, Unfavorable: 400 lbs/acre/year at high RSI (HCPC)

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Perennial brush species, Sandberg bluegrass, Squirreltail, and forbs will increase with deterioration of plant community, while Idaho fescue and Bluebunch wheatgrass decrease in the stand.

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17. **Perennial plant reproductive capability:** All species should be capable of reproduction annually

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